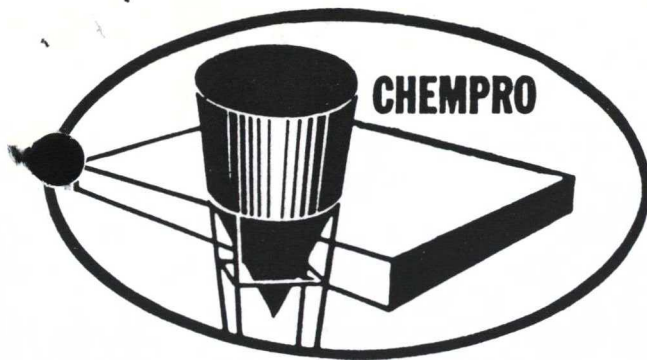


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CHEMICAL PROCESSORS, INC.
CLOSURE PLAN
PIER 91
PORT OF SEATTLE
SEATTLE, WASHINGTON 98119

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CLOSURE PLAN

CHEMICAL PROCESSORS, INC. PIER 91

INTRODUCTION

The Pier 91 facility is a former U.S. Naval facility located on the northern waterfront of Elliott Bay. More specifically, it is located within approximately one quarter mile of Smith Cove and the Smith Cove Waterway, both of which are part of Elliott Bay.

Pier 91 has developed into a prominent marine bunkering and marine recycling terminal. It handles large quantities of bilge and ballast waters, which it receives via barge and tanker. The facility also receives industrial oily waste waters. As an oil bunkering facility, a major portion of this 8,000,000 gallon complex is leased as a marine fuel depot by Pacific Northern Oil.

With respect to Chemical Processors, Pier 91's main function is waste oil reclamation. The maximum capacity of Chemical Processors' operations at Pier 91 is 3.5 million gallons. Waste oil is rendered reusable by tank treatments such as separation of impurities and breaking emulsions. All the processed oil is currently sold to Pacific Northern Oil as cutting stock in marine oils. Pier 91 also treats liquid wastes containing low level heavy metals and other low concentrations of contaminants such as phenols which can be treated to render the liquids non-hazardous.

The operation currently involves 6 to 10 employees operating through two shifts five days per week. This varies according to market conditions.

FACILITY DESCRIPTION

Chempro executed an agreement with the City of Seattle to lease a 250,000 barrel tank farm in the Port of Seattle in 1971. This facility, referred to as Pier 91, was owned by Texaco in the 1920's, transferred ownership to the Navy during World War II, and was operated by the City of Seattle prior to being leased by Chempro. The operations at the Pier 91 facility revolve around the treatment and recovery of waste oils and the blending of this material with bunker fuel.

Chempro's Pier 91 facility primarily handles four types of waste:

- Dirty bilge water from barge and ship cleaning operations;
- Pretreated oily wastes from the Lucile and Tacoma facilities;
- Oily industrial wastewater, not otherwise specified; and
- Industrial coolants from local industries.

Table 1 further delineates the waste types treated at the Pier 91 facility.

TABLE 1. CATEGORIES OF WASTES TREATED AT
CHEMICAL PROCESSORS, INC. - PIER 91 FACILITY

<u>Waste Type</u>	<u>Characteristics</u>
dirty bilge water	oil; metals, particularly zinc
treated oily sludge	bottom sediment; water
industrial coolants	phenols; hexavalent chromium; emulsified oils
industrial oil	oil, water, metals
waste oils	oil, water, metals

All wastes are delivered to Pier 91 in barges or tank trucks. These materials are pumped into the appropriate tanks as described on the preceding pages.

Storm or rain water suitable for discharge to Metro sewer system is collected by drains connected to the catchment basin. Storm waters are processed through the oil/water separator and then discharged directly to Metro sewers. An oil/water photocell monitoring device sounds an alarm if permitted levels of oil are exceeded.

Industrial wastewater discharged from the plant is collected and treated on a batch basis. The batch container is sampled after each treatment, the samples are composited and analyzed for applicable pollutants.

The Pier 91 facility only discharges water which is within the limits of its Metro discharge permit.

The facility is required to have a Spill Prevention Control and Countermeasures Plan. These plans were updated in 1984.

A closure cost estimate is attached. The closure cost estimate includes costs for a sampling procedure and analysis plan, if deemed necessary at the time of closing.

The waste streams received by Pier 91 are managed by several control procedures. They are: a detailed waste analysis plan to control waste coming into the site; run-off water is collected, tested and treated (if necessary) prior to discharge. A discharge analysis is performed for each batch to insure all discharge waters meet the Metro discharge limits in the permit. These parameters allow accurate monitoring of site conditions, and insure the integrity of the site.

The wastewater discharged by the Pier 91 facility is monitored for:

- flow (allowed 200,000 gallons per day),
- oil and grease content (permit is ≤ 100 ppm),
- pH (permit for 5.5 - 12.5),
- metals,
- sulfide,
- cyanide, and
- phenol.

The Pier 91 facility operates two shifts per day. The first shift has five operators and the second shift has two operators. Equipment specifications are included in Table 2.

The steps for closure (determined by present day operational procedures) are included in the closure plan following the closure cost estimate. Although it is not a requirement, process residues and soil contamination characterization will be determined utilizing Washington State's waste identification criteria wherever it is appropriate.

Summary

All treatment will continue to be done in existing contained and bermed areas. Covered areas are not essential for all treatment processes. The entire Pier is fenced and thus secured.

All the required daily, weekly and monthly inspections will be performed wherever necessary, until the final closure date arrives.

At all times during closure activities, the required standard operating procedures for an interim status treatment, storage and disposal facility regarding proper waste management (where and when these standards are still applicable) will be followed.

MAXIMUM INVENTORY

<u>TYPE OF WASTE</u>	<u>REQUIRED TREATMENT OR DISPOSAL</u>	<u>VOLUME OF WASTE OR NUMBER OF CONTAINERS</u>
Oil	Recycle/Sale	9,698 Barrels
Water	Treatment	24,519 Barrels
Coolant Oil	Treatment	947 Barrels
Sludge	Disposal (CSSI)	11,559 Barrels

TANK INVENTORY

<u>TANK #</u>	<u>SLUDGE (BBLs)</u>	<u>WATER (BBLs)</u>	<u>OIL (BBLs)</u>
90	2662 + 959	6710	3300
94	757 + 495	4416	1448
96	587 + 0	1478	300
97	361 + 28	4223	320
98	179 + 12	1473	508
99	585 + 0	0	1992
100	1061 + 620	3124	656
105	134 + 10	264	48
106	901 + 15	46	5
107	52 + 69	802	95
108	709 + 78	257	42
109	752 + 60	296	15
110	14 + 66	729	68
111	316 + 55	699	22
112	14 + 0	814 Coolant	0
114	30 + 0	0	890
115	5 + 0	0	0
116	0	0	12
117	0	133 Coolant	0
168	<u>5</u> 9154 + 2445	<u>0</u>	<u>43</u>
	= 11,559 BBLs	24,519 BBLs	9698 BBLs
	Coolant = 947 BBLs		

TOTAL CLOSURE COST ESTIMATE

TREATMENT/DISPOSAL	\$459,323
DECONTAMINATION	91,836
SAMPLE ANALYSIS	23,000
PROFESSIONAL ENGINEER CERTIFICATION	1,000
CONTINGENCY (10%)	<u>60,943</u>
	\$636,102

CLOSURE SCHEDULE

The schedule is based on an anticipated exact closure date within 90 days of the commencement date.

Closure Steps

1. Assess all the pertinent data to provide an inventory of all waste on site.
2. Waste oil will be thermally and chemically treated in tanks and sold. Waste water will be chemically treated and discharged to the sewer system upon completion. Waste sludge will be centrifuged and transported to CSSI.
3. The site shall be decontaminated according to the included summary as a part of this closure plan.
4. When the necessity for closure becomes evident the following will be done to calculate an exact date:
 - A. A detailed operations manual will contain the operational steps required for closure, (in addition to the information provided by this Closure Plan), as well as an Emergency Response Plan, Spill Plan, and a list of key personnel.
 - B. A request for bid will be mailed to contractors (such as Chem-Security Systems, Inc.) for transportation and disposal prices.
 - C. According to the Pier 91 facility historical operations, the output rates support the ninety day completion date.
 - D. The bermed areas will be decontaminated with a high pressure washer. The rinsate will be tested for contamination such as: lead, chromium ⁺⁶, nickel, zinc, copper and cadmium.
 - E. Tanks will be tested and rendered gas-free. Then they will be washed with a high pressure washer. The rinsate will be collected, contained, and analyzed for the parameters stated in 4D. Wastes and residues will be collected and sent to a Class I site for disposal.

TREATMENT PROCESS DESCRIPTION

Waste Treatment (Pier 91 Facility)

Four primary unit operations are incorporated at the Pier 91 facility to treat the variety of wastes accepted. These unit operations include:

- oil/water separation
- isolation and chemical treatment (oxidation, demulsification or reduction) of wastes;
- settling and solidification of wastes containing bottom sediments and water (BS&W); and
- dewatering of waste oil sludges by centrifugation.

Oily Water (Bilge Water, Ballast Water, Oil Contaminated Water)

Upon screening and acceptance, these waters are pumped to tanks 96, 97, 98 or 100 via the oil/water separator. Upon accumulation of a batch, it is tested for oil, metals, phenols and sulfides. If within acceptable limits, it is discharged to the Metro sewer system; if unacceptable, it is given additional chemical treatment until the appropriate limits are met. Residues from this operation are then pumped to tanks 106, 108, 109 or 111 for dewatering.

Waste Oil

Upon screening and acceptance this material is pumped, after removal of the free water via the oil/water separator, to one of two places. If low enough in bottom sediment and water content, it is pumped directly to tank 99 for blending and subsequent resale. If the BS&W content is in excess of twenty percent, it is pumped to process tanks 105, 107 or 110. It is then indirectly steam heated and chemically treated for sediment and water removal. Upon completion of treatment, the oil is pumped to tank 99 for blending and resale and the residue is pumped to tanks 106, 108, 109 and 111 for dewatering.

Emulsified Oils

Upon acceptance and screening, emulsified oils are pumped to tanks 105, 107, and 110 for heating to break the emulsion. The reclaimed oil is pumped to tank 99 for blending and resale. The water is pumped to tanks 96, 97, 98 and 100 for subsequent treatment or discharge. Sludges are pumped to tanks 106, 108, 109 and 111.

Coolant

Upon screening and acceptance, these oils are pumped directly to tanks 115, 116, 117 or 165 for isolation. Upon accumulation of a batch, they are pumped to tank 112 for chemical and/or discharge. Sludges are then pumped to tanks 106, 108, 109 and 111.

Phenol Contaminated Water

This material is treated like the coolant oils with additional chemicals added during treatment for oxidation.

Oily Sludges

Oily sludges are pumped directly to tanks 106, 108, 109 or 111 for dewatering.

Recently the Pier 91 facility purchased a Sharpless Model P-3000 variable speed centrifuge. This centrifuge is being used to further concentrate the stored sludge. Accumulated sludge from tanks 106, 108, 109, and 111 is processed through the centrifuge. Additional water removed from the sludge is sent back to the wastewater storage tanks. The dewatered sludge is drummed and shipped to the Arlington, Oregon facility; is about 33 percent fixed residue, and the remainder is an oil with a high BTU content.

Waste Treatment & Disposal Procedures for Specific Wastes

Waste Oil	These materials are processed on a batch basis in tanks 105, 107, and 110. Thermal treatment is via steam coils. Chemicals are added as needed to enhance separation.
Waste Water	
Waste Sludge	

The oil recovered from this operation is pumped to tank 99 for blending and resale. The water is pumped to tanks 96, 97 or 98 for additional chemical treatment (if necessary) and then discharged to the Metro sewer system after appropriate tests are conducted.

The sludge generated from the process is pumped to tanks 106, 108, 109 and 111 for subsequent centrifugation and landfill disposal.

Water	Coolant oil is treated thermally and chemically in tank 112. The oil, water and sludge from this process are handled as described above.
Coolant	

CLOSURE COST ESTIMATE
FOR TREATMENT AND DISPOSAL SUMMARY

Labor Costs	\$ 18,689
Treatment Costs	\$118,796
Transport Cost	\$ 88,357
Disposal Cost	\$286,432
Oil Sales	<u><\$ 52,951></u>
Total	\$459,323

SPECIFIC WASTE STREAM TREATMENT/DISPOSAL COST

Waste Oil
Waste Water
Waste Sludge

Steam Requirements	45,776 BBLs @ 1.26/BBL =	57,678.76
Chemical Requirements	45,776 BBLs @ 0.84/BBL =	<u>38,451.84</u>
		\$96,129.60

Coolant Oil

Steam Requirements	947 BBLs @ 1.76/BBL =	1,193.22
Chemical Requirements	947 BBLs @ 2.94/BBL =	<u>2,784.18</u>
		\$ 3,997.40

Waste Sludge

<u>Disposal</u>	CSSI \$ 98.00/Ton	<u>Disposal</u>
	10.00/Ton	Oil Surcharge
	<u>10.00/Ton</u>	Oregon State Tax
11,559 BBLs @ \$118.00/Ton	@ <u>10 lbs/gal</u>	= <u>\$286,432.00</u>
	0.21 Tons/BBL	

Transport

11,559 BBLs @ \$800/22 Tons @ 0.21 Tons/BBL = \$ 88,557.00

Labor

46,723 BBLs @ 30 BBLs/HR @ \$12.00/HR = \$ 18,689.00

Oil Sale

9,698 BBLs @ \$5.46/BBL = <\$ 52,951.00>

DECONTAMINATION PROCEDURE

The equipment on the Pier 91 facility requiring decontamination will consist of the storage tanks, and the pavement (surface).

A high pressure washer will be used for decontamination of tanks, and surface of the facility. Since the tanks will be emptied prior to decontamination the high pressure washers will remove insoluble particulate matter. This particulate matter will be filtered, and shipped to Chem-Security Systems' Class I site for disposal.

The liquid residue generated (presumed to be non-hazardous) will be analyzed to ensure its non-hazardous characteristics. The analysis will consist of heavy metal analyses.

Since all the tanks are located in bermed areas, the rinsate from each tank and/or piece of equipment being decontaminated, will be pumped from the bermed area(s) to a 250,000 gallon storage tank. The analysis will be conducted on the total rinsate. Since treatment for closure will be conducted within paved, bermed areas, no contamination will occur. Anticipating that certification can be taken during a single inspection, no material will remain on site. The total area is already secured by a fence. No additional equipment will be required for security measures.

This decontamination procedure has been developed through heuristic methods of management on various projects, resulting from the implementation of related closure plans.

SUMMARY OF SOIL SAMPLING

It is the intent of Chemical Processors to achieve clean closure so as not to necessitate a post closure plan or monitoring. All soils, structures and equipment contaminated by hazardous wastes or from hazardous waste operations will be removed and disposed of accordingly.

Soil sampling will be conducted to determine if hazardous waste contamination exists and to what extent if it exists. It is proposed to core and auger twenty (20) soil borings selected by both authoritative and random location selection processes. If the soil sample analysis indicates significant hazardous waste contamination, then groundwater monitoring wells will be installed. A groundwater monitoring program will be conducted quarterly for one year to determine the status of contamination in the groundwater. Existing monitoring well data from the Port of Seattle immediately downgradient of the Chempro Pier 91 facility indicates that there is no significant hazardous waste contamination in the groundwater.

It is anticipated that soil contamination, if found, is a result of non-hazardous waste activities such as oil bunkering for which the facility historically was used and continues to be used for currently. Any cleanup of contamination from non-hazardous waste activities are proposed to be done under a non-RCRA corrective action plan.

COST ESTIMATES FOR SAMPLING AND ANALYSIS

Labor for Boring, Augering and Sampling \$ 5,000

(Sweet, Edwards & Associates)

Laboratory Analysis

20 Samples x \$1150 each \$23,000

(Organic/Volatile Analysis, Analytical
Resources Laboratory, Seattle, Wa.

E.P. Toxic Metals Analysis, Columbia
Lab, Longview, Wa.)

SAMPLING PLAN

Soil samples will be collected in a minimum of 20 locations where wastes were managed by Chemical Processors. These locations will include storage and treatment tank contained and bermed areas and the loading and unloading areas. The site will be divided into grid sections and the sample locations will be randomly selected using EPA's SW 846 random sample selection process. In addition authoritative sampling locations will be selected based on suspected contamination such as by sumps, surface ponding areas and underground piping locations. For each sample location the concrete or asphalt will be cored and soil samples collected by stainless steel hand auger or split spoon sampling. Sampling decontamination procedures, QA/QC and the Health and Safety Plan will be provided by Sweet, Edwards and Associates.

The samples collected will be analyzed for volatile organics by Analytical Resources, Inc. Laboratory, Seattle, Washington, and for E.P. Toxic Metals by Columbia Laboratories, Longview, Washington.

EQUIPMENT REQUIRED FOR WASTE REMOVAL

The removal, treatment and disposal of waste will require:

<u>TYPE OF EQUIPMENT</u>	<u>NUMBER OF EACH</u>
Forklift	1
High Pressure Washer	2
Air Diaphragm Pumps	4
Centrifuge	1
Dump Trucks	2

The labor and types of treatment required for closure are:

Thermal treatment for oil, water, sludge.

Chemical treatment for oil, water, sludge.

Centrifugation for sludge.

CLOSURE COST ESTIMATE FOR DECONTAMINATION

TANKS

<u>Capacity (BBLs)</u>	<u>Number of Tanks</u>	<u>\$/Tank</u>	<u>Cost Estimate</u>
14,700	1	\$13,137	\$13,137
8,400	1	\$ 7,500	\$ 7,500
6,000	5	\$ 5,322	\$26,610
1,133	9	\$ 1,013	\$ 9,117
200-400	3	\$ 304	<u>\$ 912</u>
			\$57,216

- 1) Based on quoted contractor cost of \$1500 for 8400 BBL tank.
- 2) Residues from decontamination have already been included in sludge disposal.

Surface Decontamination & Miscellaneous Cleanup Expenditures

Man hours - 2880 hours @ \$12.00/hr = \$34,560.00

Sample Analysis (Heavy Metals Scan) = \$23,000.00